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PUBLIC HEALTH REPORTS

VOL. 30 AUGUST 6, 1915 No. 32

METHODS OF DESTROYING LICE.

In the British Medical Journal of June 19, 1915, appeared a report entitled "An Investigation of the Best Methods of Destroying Lice and Other Vermin," by J. Parlane Kinloch, M. D., lecturer in public health, University of Aberdeen. The investigation was made with a view to the control of vermin among troops and the prevention of the spread of typhus fever. The author's conclusions and his statement of their practical application are here quoted:

Conclusions.

"1. The louse can be bred and reared in the incubator under suitable conditions of temperature and moisture. Constant conditions for breeding and rearing lice in the incubator remain to be determined.

"2. Dry heat is more effective than moist heat in destroying lice and their eggs. The louse can be revived after immersion for one minute in water at 100° C. Exposure to a dry heat at the same temperature and for the same time appears to kill both lice and nits.

"3. The paraffin bodies are actively insecticidal, and of these petrol (gasoline) is the most effective. Lice and their eggs are destroyed by immersion in petrol for one minute, and they may be killed by exposure to the vapor of petrol for half an hour.

"4. Powerful fatty solvents other than the paraffins are actively insecticidal. Benzine, toluene, and acetone are as toxic to lice as petrol. Certain chlorine derivatives of methane, ethane, and ethylene are more lethal to lice than any other substances, and have the important merit of being noninflammable. Immersion in the chlorine derivatives of ethane and ethylene immediately destroys all lice and nits, and exposure to the vapor of these substances for five minutes is equally destructive. Even soap solutions containing 2 per cent of trichlorethylene or 10 per cent of tetrachlorethane are capable of killing in half an hour at ordinary temperatures all lice and nits.

"5. A 25 per cent solution of dichlorethylene or trichlorethylene in vaseline when applied to the human body has been found capable of exerting its insecticidal action for hours. The action of a 25 per cent solution of petrol in vaseline is of shorter duration, but is also effective for some hours.

"6. The common phenol disinfectants, in their usual degrees of dilution for disinfectant purposes and at ordinary temperature, fail to kill lice or nits, even after steeping for half an hour, but become efficient as insecticides if the temperature of the steeping tank is maintained at 65° C.

"7. The volatile oils have no direct insecticidal effect. In a moist vapor of oil of wintergreen, oil of cloves, oil of caraway, oil of turpentine, oil of eucalyptus, oil of thyme, etc., lice live for many hours at body temperature, and can be revived after immersion in these oils.

"8. Over solid substances, such as iodoform, camphor, and paraform, and in contact with them, and in contact with garments impregnated with sulphur, borax, black hellebore, alum, etc., lice appear to remain practically unaffected.

"9. The hungry louse feeds on the human body previously anointed with sulphur ointment, balsam of Peru, mercury oleate ointment, chrysarobin ointment, stavesacre ointment, and hellebore ointment. The louse certainly prefers the clean body, but it can feed on the body thus anointed and thereafter survive.

"10. It has still to be determined whether some of these bodies that have been shown not to be actively insecticidal may not have, when rubbed on the body or placed in clothing, a useful repellent effect on body vermin.

"Practical Application.

"For practical purposes it has been found that destruction of lice and nits is best secured by immersion of verminous garments and bedclothes in a petrol (gasoline) or benzene bath. Danger from fire and waste of petrol are avoided by using such a bath and extractor as are employed in a dry-cleaning apparatus. In such an apparatus 90 per cent of the petrol or benzene is recovered for future use. A petrol or benzene bath is necessary, especially for uniforms and woolen garments generally. Where the clothing is such that it is not injured by immersion in water, steeping the garments for half an hour at 12° C. (54° F.) in a soap solution containing 2 per cent of trichlorethylene or 10 per cent of tetrachlorethane secures destruction of lice and nits. It is only fair to say that the only soap solutions that I have so far experimented with are those sold as 'Westropol' and 'Westoran.' Steeping for half an hour in a 5 per cent solution of cyllin in water maintained at 65° C. (149° F.) is also effective, and this temperature has no injurious shrinkage effect on woolen articles.

"For economical reasons the chlorine derivatives of ethane and ethylene can not at present be used in a dry-cleaning process, but their soap preparations are of value. Petrol has a wide application and is readily obtained.

"For cleansing the body itself, bathing or sponging with soap solutions containing 2 per cent of trichlorethylene or 10 per cent tetrachlorethane gives the best results.

"In view of the known insecticidal action of these chlorine derivatives of ethylene and ethane it is probable that good results would be obtained by shampooing verminous heads with their soap preparations, and it is also probable that a 25 per cent solution of trichlorethylene in vaseline would form an efficient insecticidal pomade.

"It is almost certain that lice would not continue to live on the human body if anointed daily with a 25 per cent solution of trichlorethylene in vaseline, or on the body anointed twice daily with a solution of petrol in vaseline of similar strength. The odor of such an ointment is not unpleasant. But living under verminous conditions constant precautions would have to be taken and every method of destroying vermin would require to be employed.

"Means for the destruction of lice are available. Any attempt to render an army free from vermin in war time would require that all men occupying the same quarters at the same time, or for alternating short periods of time, would be regarded as a single unit, for which a receiving station with cleansing apparatus would be provided. Such an attempt would also require that the movements of the men off duty were controlled. It would be limited by immediate military necessities.

"There is reason to believe that vermin are responsible for the transmission of the infection of typhus fever, and Nicolle has shown that the louse can convey the infection. Epidemics of typhus fever come and go, and the amount of any epidemic will be influenced by the verminous conditions prevailing. In dealing with typhus patients vermin must first be destroyed by some of the methods above described. Ambulance men and receiving nurses are to be similarly protected, or, if available, a staff of ambulance men and receiving nurses already immune by a previous attack of the disease are to be employed."

THE NUMBER AND KIND OF DRUG ADDICTS.[1]

By MARTIN I. WILBERT, Technical Assistant, Division of Pharmacology, Hygienic Laboratory, United States Public Health Service.

In recent years social workers, reformers, and newspaper writers generally have seemed to vie with each other in the presentation of startling data regarding the number and kind of drug addicts in

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[1] Presented at the meeting of the Pennsylvania Pharmaceutical Association, Forest Park, Pa., June 22-24, 1915.